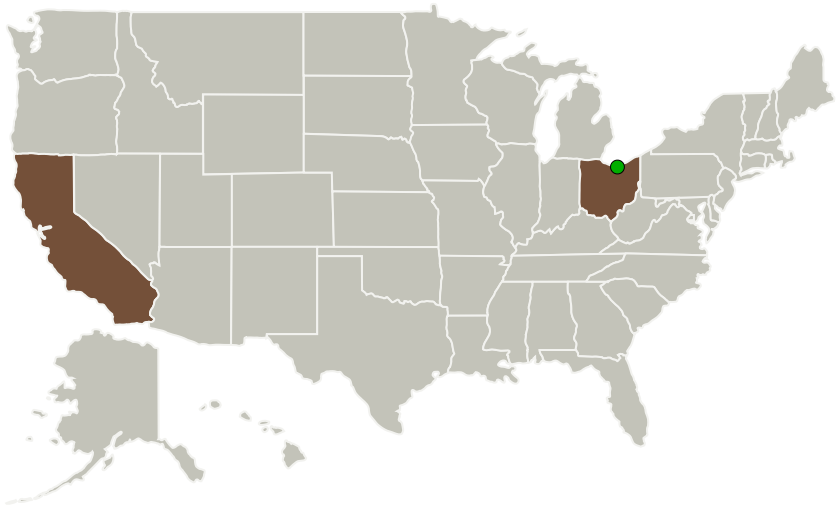
Hybrid Electric Propulsion System for a VTOL/Multirotor Aircraft, Phase II

Completed Technology Project (2015 - 2017)

Project Introduction

LaunchPoint Technologies proposes to build a scalable hybrid electric propulsion system. LaunchPoint will build and fly a 1 kW hybrid electric vehicle and will build and bench test a 6 kW hybrid power source to demonstrate scalability to much larger systems. During the phase I, LaunchPoint showed the feasibility of a manned hybrid electric VTOL vehicle that can achieve the speed and fuel efficiency of a high aspect fixed wing aircraft while still providing VTOL capability for a commuter-type application. Using Fly-By- Wire techniques and applying it to electric aircraft propulsion can lead to highly reliable architectures which we call "Propulsion-By-Wire", providing a tremendous increase in reliability and safety of the vehicle compared to conventional VTOL architectures. In this phase II we propose to develop the hybrid power source (Battery, BMS, Gen-set, and hybrid controller) portion of a "Propulsion-By-Wire" system for 2 power levels. LaunchPoint will build and fly a 1 kW hybrid electric vehicle that will meet notional airworthiness requirements for flight over people, and will scale the hybrid power source to 6kW proving the potential scalability of the system.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
LaunchPoint Technologies, Inc.	Lead Organization	Industry	Goleta, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

Images

Briefing Chart
Hybrid Electric Propulsion System for a VTOL/Multirotor Aircraft Briefing Chart
(https://techport.nasa.gov/image/131192)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
LaunchPoint Technologies, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

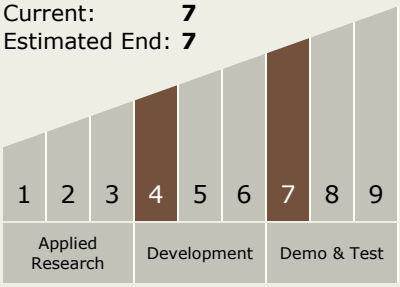
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Jessica A Dozoretz

Technology Maturity (TRL)

Start: **4**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.3 Mechanical Systems
    - TX12.3.2 Electro-Mechanical, Mechanical, and Micromechanisms

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System